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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,373	02/28/2002	Paul Albats JR.	HO-P02029US1	8449
26271	7590	12/17/2003	EXAMINER	
FULBRIGHT & JAWORSKI, LLP 1301 MCKINNEY SUITE 5100 HOUSTON, TX 77010-3095			YAM, STEPHEN K	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/085,373

Applicant(s)

ALBATS ET AL.

Examiner

Stephen Yam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2003 has been entered. Claims 1-20 are still pending.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Lemelson US Patent No. 4,636,137.

Regarding Claim 1, Lemelson teaches (see Fig. 3) a movable sensor apparatus (7) comprising a movable housing (20), at least one supporting extension (11) wherein each supporting extension is rotatably affixed (see Col. 6, lines 28-33) to said housing, being fully rotatable about a first (vertical) axis (as supporting extension (11) is rotated using a standard motor (19) through gears (19S) and there are no components placed that obstruct the rotation of the supporting extension (11)), at least one sensor (34) rotatably affixed (see Col. 11, line 66 to

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Col. 12, line 5) to one of said at least one supporting extension about a second (horizontal) axis different from said first axis, a linear propulsion mechanism (VM1) attached to said housing whereby said housing may be moved over the ground (see Col. 6, lines 34-42), a triggering unit (59) (see Col. 9, lines 23-26) electrically coupled to each of said at least first sensor and capable of separately activating each of said at least one sensor, and a sampling unit (50) electrically coupled to each of said sensor and capable of receiving output from each of said at least one sensor (see Col. 7, lines 34-46).

Regarding Claim 3, Lemelson teaches the sensor as an optical camera (see Col. 6, lines 19-22).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. US Patent No. 6,333,631 in view of Lemelson US Patent No. 4,636,137.

Regarding Claims 1-6, 8, 10, 12, 14, 15, and 17-20, Das et al. teach (see Fig. 1) a movable sensor apparatus (7) comprising a movable housing (6), at least one supporting extension (2,25) wherein each supporting extension is rotatably affixed (see Fig. 4) to said housing about a first (Z) axis, at least one sensor (3,4,5) rotatably affixed (see Fig. 4) to one of said at least one supporting extension about a second (Z<sub>3</sub>,Z<sub>5</sub>) axis different from said first axis, a

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triggering unit (see Col. 2, lines 39-46) electrically coupled to each of said at least first sensor and capable of separately activating each of said at least one sensor, and a sampling unit (see Col. 2, lines 43-46) electrically coupled to each of said sensor and capable of receiving output from each of said at least one sensor. Since Das et al. teach the housing as wheeled and traversing the ground (see Col. 3, lines 43-45), inherently a linear propulsion mechanism is included to move the vehicle relative to the ground by rotation of the wheels. Regarding Claim 10, Das et al. teach a movable sensor apparatus comprising a movable housing (6), a first supporting extension (2) rotatably affixed (see Fig. 4) to said housing about a first (Z) axis, a second supporting extension (25) rotatably affixed (see Fig. 4) to said housing about said first (Z) axis, a first sensor (3) rotatably affixed (see Fig. 4) to said first supporting extension about a second ( $Z_3$ ) axis different from said first axis, a second sensor (4, 5) rotatably affixed (see Fig. 4) to said second supporting extension about a third ( $Z_5$ ) axis different from said first and second axes, a triggering unit (see Col. 2, lines 39-46) electrically coupled to said first and second sensor and capable of separately activating said first and second sensor, and a sampling unit (see Col. 2, lines 43-46) electrically coupled to said first and second sensor and capable of receiving output from said first and second sensor. Since Das et al. teach the housing as wheeled and traversing the ground (see Col. 3, lines 43-45), inherently a linear propulsion mechanism is included to move the vehicle relative to the ground by rotation of the wheels. Regarding Claim 2, Das et al. teach the sensor (3) as a magnetometer (see Col. 4, lines 26-37). Regarding Claim 3, Das et al. teach the sensor (4) as an optical camera, as the sensor contains an optical position encoder (which inherently comprises a camera to detect position from the optical signal emitted from the laser source) (see Col. 7, lines 45-54). Regarding Claim 4, Das et al. teach the sensor (3) as a

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metal detector (see Col. 4, lines 26-30)- inherently, a metal detector is an electromagnetic induction sensor. Regarding Claim 5, Das et al. teach the sensor (5) as a sonar sensor (see Col. 4, lines 50-59). Regarding Claim 6, Das et al. teach the supporting extension as rotating at a constant rate of rotation (see Col. 6, lines 59-61 and Col. 7, lines 49-51). Regarding Claim 8, Das et al. teach (see Fig. 1) a position indicator (4, 5) coupled to the supporting extension (see Col. 5, lines 47-50). Regarding Claim 12, Das et al. teach the first sensor (3) as a radar sensor (see Col. 4, lines 26-37) and a second sensor (4) as an optical camera (see Col. 7, lines 45-54). Regarding Claim 14, Das et al. teach the first sensor (3) as a radar sensor (see Col. 4, lines 26-37) and a second sensor (5) as a sonar sensor. Regarding Claim 15, Das et al. teach the first sensor (3) as a magnetometer (see Col. 4, lines 26-37) and a second sensor (4) as an optical camera (see Col. 7, lines 45-54). Regarding Claim 17, Das et al. teach the first sensor (3) as a magnetometer (see Col. 4, lines 26-37) and a second sensor (5) as a sonar sensor. Regarding Claim 18, if the references to a first and second supporting extension and sensor are reversed ("first"-">"second" and "second"-">"first"), Das et al. teach the first sensor (4) as an optical camera (see Col. 7, lines 45-54) and a second sensor (3) as an electromagnetic induction sensor (see Col. 4, lines 26-37). Regarding Claim 19, Das et al. teach the first sensor (4) as an optical camera and a second sensor (5) as a sonar sensor. Regarding Claim 20, Das et al. teach the first sensor (3) as an electromagnetic induction sensor (see Col. 4, lines 26-37) and a second sensor as a sonar sensor (5). Das do not teach the first (and second) support extensions as *fully* rotatable about the first axis, the first sensor as *fully* rotatable about the second axis, and the second sensor as *fully* rotatable about the third axis. Lemelson teaches (see Fig. 3) a movable sensor apparatus comprising a movable housing (20), a supporting extension (11) rotatably affixed (see Col. 6,

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lines 28-33) to the housing, fully rotatable about a first (vertical) axis (as supporting extension (11) is rotated using a standard motor (19) through gears (19S) and there are no components placed that obstruct the rotation of the supporting extension (11)), a sensor (34) rotatably affixed (see Col. 11, line 66 to Col. 12, line 5) to the supporting extension, being fully rotatable (since it uses a similar motor as the motor (19) used to rotate the supporting extension (11)- see Col. 12, lines 1-5 and there is no obstruction for the rotation about the second axis) about a second (horizontal) axis different from said first axis, and a linear propulsion mechanism (VM1) attached to said housing whereby said housing may be moved over the ground (see Col. 6, lines 34-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each supporting extension as *fully* rotatable, as taught by Lemelson, in the apparatus of Das, to increase flexibility of movement of the sensors in the apparatus to provide easier sensor operation in rough terrain conditions.

Regarding Claim 7, Das et al. teach the apparatus as taught in Claim 6, according to the appropriate paragraph above. Das et al. do not teach each sensor rotating at a constant rate of rotation equal in magnitude to the rate of rotation of the supporting extension. It is well known to rotate sensors constantly in a certain direction to capture surrounding information and to use identical motors in a device to simplify its production and lower repair costs. It would have been obvious to one of ordinary skill in the art at the time the invention was made to rotate each sensor in an opposite direction at an equal rate of rotation in the apparatus of Das et al. in view of Lemelson, to provide a low-cost method of obtaining accurate distance data in all directions, to gather further environmental sensor data.

Regarding Claim 9, Das et al. in view of Lemelson teach the apparatus as taught in Claim 6, according to the appropriate paragraph above. Das et al. also teach a computer system (see Col. 3, lines 46-49) attached to the apparatus. Das et al. do not teach a data storage device for storing sensor data collected the sensor and position data collected from the position indicator. It is well known to capture sensor and positional data, to map a large terrain containing hazardous objects. It would have been obvious to one of ordinary skill in the art at the time the invention was made to store the sensor and positional data in the apparatus of Das et al. in view of Lemelson, to provide determine the precise location of mines to map an area for hazardous objects.

Regarding Claims 11, 13, and 16, Das et al. in view of Lemelson teach the method as taught in Claim 6, according to the appropriate paragraph above. Das et al. do not teach two different sensors chosen from the list of a magnetometer, radar sensor, or electromagnetic induction sensor. It is well known to use two separate sensors in a sensor apparatus, to improve detection accuracy and reduce false readings. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use at least two different sensors chosen from the list of a magnetometer, radar sensor, or electromagnetic induction sensor in the apparatus of in view of Lemelson, to further improve the detection of mines and other metallic objects as desired by Das et al.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (703)306-3441. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703)308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

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**THANH X. LUU**  
**PATENT EXAMINER**